SUMMARY OF THE INVENTION

[0003a] According to a first aspect of the present invention, there is provided a shielded locking assembly for securely closing a lid on an enclosure, comprising a spring-biased slide member positioned within a non-conductive cover on an underside of the lid; and an L-bolt having a leg portion thereof coupled to the slide member; the L-bolt having an elongated shaft portion thereof rotatable in a slotted housing that securely retains the L-bolt under the lid; the slide member having a latch thereof adapted to engage a rim or other abutment on an inside of the enclosure when the lid is forced down over an opening in the enclosure, such downward force on the lid progressively causing the latch to retract against the spring-bias, from contact with the rim or abutment, and then snap the latch into a spring-biased locking position under the rim or abutment; the shaft portion of the L-bolt accessible from the exterior of the lid for rotating the L-bolt to retract the latch against the spring-bias and from its locking position sufficiently for removing the lid from the enclosure, the non-conductive cover having a channel for receipt of and guiding travel of the spring-biased slide member, wherein the cover shields the locking assembly from electrical conductivity from within the enclosure and wherein the cover further shields fasteners for attaching the locking assembly to the lid.

[0003b] According to a second aspect of the present invention, there is provided a shielded self-latching locking assembly for securely closing a lid on an enclosure, comprising: a non-conductive cover secured to an underside of the lid; a slide member disposed within the cover, the slide member having a latch thereof positioned to engage an abutment located on an inside of the enclosure when the lid is forced down over an opening in the enclosure; a resilient spring member disposed in the slide member; the spring member normally biasing the latch to an extended position adapted for contact with the abutment on the enclosure, the slide member adapted to slide within the cover, against the bias of the

spring member, to a retracted position from the latch contacting the abutment with a downward force, when the lid is forced down over the opening in the enclosure, the slide member adapted to move with a snap-action to the extended position, under the bias of the spring member, when said downward force causes the latch to bypass and release from contact with the abutment on the enclosure; the latch in said extended position being retained in a locking position beneath the abutment via the bias of the spring member; and an L-bolt having a shaft portion thereof positioned in the lid adjacent the slide member and a leg portion thereof coupled to the slide member between the spring member and the latch, the cover guiding spring-biased axial travel of the slide member between the extended and retracted positions, in unison with rotation of the shaft portion of the L-bolt, the shaft portion of the L-bolt accessible from the exterior of the lid for rotating the L-bolt to retract the latch from the locking position and against the spring-bias sufficiently for removing the lid from the enclosure; wherein the cover is shaped to substantially enclose and shield the slide member, spring member and L-bolt from electrical conductivity from within the enclosure and wherein the slide member is disposed within a guide frame and the cover further shields fasteners for attaching the guide frame to the lid.

[0003c] According to a third aspect of the present invention, there is provided an equipment enclosure assembly including a hollow enclosure, a lid for removably closing a top of the enclosure, and a shielded locking assembly for securely locking the lid to an opening in the enclosure, in which the enclosure has a locking surface positioned adjacent a rim or abutment on an inside wall of the enclosure, the shielded locking assembly positioned adjacent an edge of the lid for cooperating with the locking surface inside the enclosure, the shielded locking assembly comprising: a self-latching slide member slidably disposed in a non-conductive cover secured to an underside of the lid; a resilient biasing spring member engaging the slide member for controlling spring-biased travel of the slide member toward and away from the locking surface; a latch carried on the slide member and adapted to

contact the rim or abutment on the enclosure from a downward force applied to the lid being positioned in the opening of the enclosure, the latch retracting the slide member against the spring-bias as the latch travels over the rim or abutment in response to the downward contact force applied to the rim or abutment, followed by snap-locking the latch into spring-biased engagement with the locking surface below the rim or abutment for locking the lid to the opening in the enclosure; an L-bolt rotatably disposed in the lid, the L-bolt rotatable between an unlocked position and a locked position; a slotted structure affixed to an underside of the lid, the slotted structure projecting downwardly away from the underside of the lid to a downwardly facing opening on the slotted structure which is spaced below the lid and positioned adjacent the locking surface and adjacent a guide frame, the L-bolt extending through a passage in the lid and in the slotted structure to the underside of the lid; the L-bolt having (1) a right angle leg portion protruding below the bottom of the slotted structure; and (2) a position-adjusting device exposed to an upper surface of the lid; a separate locking piece inserted into the passage in the slotted structure and positioned around the L-bolt to prevent removal of the L-bolt from the exterior of the lid once the L-bolt is positioned in the passage through the slotted structure; the right angle leg portion of the L-bolt coupled to the slide member so that sliding travel of the slide member causes rotation of the L-bolt; the cover guiding spring-biased axial travel of the slide member in unison with rotation of the L-bolt in the slotted housing, the snap-action of the latch engaging the locking surface in the enclosure causing the L-bolt to rotate to a spring-biased locked position, rotation of the L-bolt in a direction away from the locked position retracting the slide member against the spring-bias to allow removal of the lid from the enclosure; wherein the cover has a profile that separates and covers the slide member, spring member, latch and L-bolt from the interior of the enclosure so as to shield the slide member, spring member, latch and L-bolt from electrical conductivity within the enclosure and wherein the cover further shields fasteners for attaching the locking assembly to the lid.

[0004] Briefly, one embodiment of the invention comprises a shielded self-latching locking assembly for locking a lid to the top of a hollow enclosure. The locking assembly includes a spring-biased latch that engages a locking surface on the interior of the enclosure and a cover that separates and covers the locking assembly from interior components within the enclosure. The locking surface can be a rim or wall section of the enclosure or a recess formed in an inside wall of the enclosure. The locking assembly may be positioned on and adjacent to an edge of the lid. The locking assembly cooperates with the locking surface inside the lid to lock the lid to the top of the enclosure when the lid is placed over the enclosure and the latch is actuated by a downward force, such as foot pressure, for example, against the top of the lid.

[0005] One embodiment of the invention comprises a self-latching locking assembly positioned on an edge of a lid that removably mounts over an enclosure. The assembly includes an opening in an upper face of the lid which leads into a slotted housing on the underside of the lid. An L-bolt extends through the opening and into a passage in the slotted housing. A right-angle leg on the L-bolt protrudes below the bottom of the slotted housing. The L-bolt is rotatable by a tool that engages the L-bolt from outside the lid. A separate locking piece positioned inside the passage in the slotted housing retains the L-bolt in the slotted housing and prevents its removal from access outside the lid. The right-angle leg of the L-bolt engages a spring-biased self-latching slide member on the underside of the lid. The slide member is contained in a guide frame structure affixed to the underside of the lid adjacent the slotted housing that contains the L-bolt. The guide frame structure guides spring-biased axial travel of the slide member, which travels axially in the guide frame in unison with rotation of the L-bolt in the slotted housing. A latch carried on the slide member engages a lip or other abutment inside the enclosure when the lid is forced down over the opening in the enclosure. The latch retracts against the spring-bias as it travels over the lip or

WHAT IS CLAIMED IS:

1. A shielded locking ~~system~~assembly for securely closing a lid on an enclosure, comprising a spring-biased slide member positioned within a non-conductive cover on an underside of the lid; and an L-bolt having a leg portion thereof coupled to the slide member; the L-bolt having an elongated shaft portion thereof rotatable in a slotted housing that securely retains the L-bolt under the lid; the slide member having a latch ~~portion~~ thereof adapted to engage a rim or other abutment on an inside of the enclosure when the lid is forced down over an opening in the enclosure, such downward force on the lid progressively causing the latch to retract against the spring-bias, from contact with the rim or abutment, and then snap the latch into a spring-biased locking position under the rim or abutment; the shaft portion of the L-bolt accessible from the exterior of the lid for rotating the L-bolt to retract the latch against the spring-bias and from its locking position sufficiently for removing the lid from the enclosure, the non-conductive cover having a channel for receipt of and guiding travel of the spring-biased slide member, wherein the cover shields the locking ~~system~~assembly from electrical conductivity from within the enclosure and wherein the cover further shields fasteners for attaching the locking assembly to the lid.

2. The locking ~~system~~assembly of claim 1 wherein the cover includes a rib wall for engaging an end of a spring in the slide member.

3. The locking ~~system~~assembly of claim 1 or claim 2 wherein the cover has a flange portion for positioning over the leg portion of the L-bolt.

~~4. The locking system of claim 1 wherein the cover further shields fasteners for attaching the locking system to the lid.~~

~~5.~~4. The locking ~~system~~ assembly of ~~claim 1~~any one of the preceding claims wherein the cover has an open end for passage of the latch to engage the rim or other abutment on the inside of the enclosure.

~~6.~~5. A shielded self-latching locking ~~system~~assembly for securely closing a lid on an enclosure, comprising:

a non-conductive cover secured to an underside of the lid;

a slide member disposed within the cover, the slide member having a latch ~~portion~~ thereof positioned to engage an abutment located on an inside of the enclosure when the lid is forced down over an opening in the enclosure;

a resilient spring member disposed in the slide member;

the spring member normally biasing the latch to an extended position adapted for contact with the abutment on the enclosure,

the slide member adapted to slide within the cover, against the bias of the spring member, to a retracted position from the latch contacting the abutment with a downward force, when the lid is forced down over the opening in the enclosure,

the slide member adapted to move with a snap-action to the extended position, under the bias of the spring member, when said downward force causes the latch to bypass and release from contact with the abutment on the enclosure;

the latch in said extended position being retained in a locking position beneath the abutment via the bias of the spring member; and

an L-bolt having a shaft portion thereof positioned in the lid adjacent the slide member and a leg portion thereof coupled to the slide member between the spring member and the latch,

the cover guiding spring-biased axial travel of the slide member between the extended and retracted positions, in unison with rotation of the shaft portion of the L-bolt,

the shaft portion of the L-bolt accessible from the exterior of the lid for rotating the L-bolt to retract the latch from the locking position and against the spring-bias sufficiently for removing the lid from the enclosure;

wherein the cover is shaped to substantially enclose and shield the slide member, spring member and L-bolt from electrical conductivity from within the enclosure and wherein the slide member is disposed within a guide frame and the cover further shields fasteners for attaching the guide frame to the lid.

~~7.~~6. The locking ~~system~~assembly of claim ~~6~~5 wherein the cover includes a rib wall for engaging an end of the spring member in the slide member.

~~8.~~7. The locking ~~system~~assembly of claim ~~7~~5 or claim 6 wherein the cover has a flange portion for positioning over the leg portion of the L-bolt.

~~9. The locking system of claim 7 wherein the cover further shields fasteners for attaching the guide frame to the lid.~~

~~10.~~8. The locking ~~system~~assembly of ~~claim 6~~any one of claims 5 to 7 wherein the cover has an open end for passage of the latch to engage the abutment on the inside of the enclosure.

~~11.~~9. The locking ~~system~~assembly of claim ~~7~~6 wherein the slide member has a channel for receipt of the spring member.

~~12.~~10. An equipment enclosure assembly including a hollow enclosure, a lid for removably closing a top of the enclosure, and a shielded locking assembly for securely locking the lid to an opening in the enclosure, in which the enclosure has a locking surface

positioned adjacent a rim or abutment on an inside wall of the enclosure, the shielded locking assembly positioned adjacent an edge of the lid for cooperating with the locking surface inside the enclosure, the shielded locking assembly comprising:

a self-latching slide member slidably disposed in a non-conductive cover secured to an underside of the lid;

a resilient biasing spring member engaging the slide member for controlling spring-biased travel of the slide member toward and away from the locking surface;

a latch carried on the slide member and adapted to contact the rim or abutment on the enclosure from a downward force applied to the lid being positioned in the opening of the enclosure, the latch retracting the slide member against the spring-bias as the latch travels over the rim or abutment in response to the downward contact force applied to the rim or abutment, followed by snap-locking the latch into spring-biased engagement with the locking surface below the rim or abutment for locking the lid to the opening in the enclosure;

an L-bolt rotatably disposed in the lid, the L-bolt rotatable between an unlocked position and a locked position;

a slotted structure affixed to an underside of the lid, the slotted structure projecting downwardly away from the underside of the lid to a downwardly facing opening on the slotted structure which is spaced below the lid and positioned adjacent the locking surface and adjacent ~~the~~a guide frame, the L-bolt extending through a passage in the lid and in the slotted structure to the underside of the lid;

the L-bolt having (1) a right angle leg portion protruding below the bottom of the slotted structure; and (2) a position-adjusting device exposed to an upper surface of the lid;

a separate locking piece inserted into the passage in the slotted structure and positioned around the L-bolt to prevent removal of the L-bolt from the exterior of the lid once the L-bolt is positioned in the passage through the slotted structure;

the right angle leg portion of the L-bolt coupled to the slide member so that sliding travel of the slide member causes rotation of the L-bolt;

the cover guiding spring-biased axial travel of the slide member in unison with rotation of the L-bolt in the slotted housing, the snap-action of the latch engaging the locking surface in the enclosure causing the L-bolt to rotate to a spring-biased locked position, rotation of the L-bolt in a direction away from the locked position retracting the slide member against the spring-bias to allow removal of the lid from the enclosure;

wherein the cover has a profile that separates and covers the slide member, spring member, latch and L-bolt from the interior of the enclosure so as to shield the slide member, spring member, latch and L-bolt from electrical conductivity within the enclosure and wherein the cover further shields fasteners for attaching the locking assembly to the lid.

~~13.~~11. The enclosure assembly of claim ~~12~~10 wherein the cover includes a rib wall for engaging an end of the spring member in the slide member.

~~14.~~12. The enclosure assembly of claim ~~13~~11 wherein the cover has a flange portion for positioning over the right angle leg portion of the L-bolt.

~~15. The enclosure assembly of claim 13 wherein the cover further shields fasteners for attaching the cover to the lid.~~

~~16.~~13. The enclosure assembly of any one of claims 10 to 12 wherein the cover has an open end for passage of the latch to engage the abutment on the inside of the enclosure.

~~17.~~14. The enclosure assembly of claim ~~13~~11 wherein the slide member has a channel for receipt of the spring member.

~~18.~~15. The enclosure assembly of ~~claim 12~~any one of claims 10 to 14 in which the enclosure is a utility vault.

~~19.~~16. The enclosure assembly of claim ~~18~~15 in which the utility vault contains underground communications equipment.

~~20.~~17. The enclosure assembly of ~~claim 12~~any one of claims 10 to 16 wherein the cover is non-conductive.